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NJ Clean Air Council Public Hearing
Fine Particulate Matter in the Atmosphere – Health Impacts and Control Measures

Outline of Testimony

I Personal Background:

- Currently transportation consultant.
- Prior to 2003 I worked for 25 years at the New York Power Authority. For the first 17 years at NYPA I was an R&D Engineer. For the last 8 years I was Manager of the Electric Transportation Group.
- Prior to being at NYPA I worked for 7 years at NYSERDA.

I was asked to speak here primarily to describe the NYPA school bus program and other transportation projects I have worked on and managed that have bearing on this hearing.

I would first advise that in considering your recommendations that you take a broader perspective and not focus on a single technology or a single pollutant. As it concerns transportation consider the broader transportation policy issues, and their related economic, air quality and energy consequences.

II School Bus Emission Offset Program:

- NYPA has committed $6 million to offset the emissions from 10 combustion turbines placed in service in NYC.
- The program objective was to install diesel particulate (DPF) filters on 1000 school buses in NYC and to fuel these buses with ultra low sulfur diesel fuel (ULSD). NYPA would pay for the DPF and its installation, and the differential cost of the ULSD fuel.
- NYCDOE has >5000 school buses, about 3000 are 35'/66 passenger buses, bus service provided by outside contractors.
- Contractors generally keep buses 12-15 years, they get about 8 mpg and travel 9000 mi/yr.
- We had to adjust program as we learned more about the buses, how they are operated, and the relationship of the operators with the NYCDOE
    1. DPF can only be placed on 1995 and newer buses; they require 4 stroke electronically controlled engines. Need sufficiently high exhaust temperatures to burn off particulates.
    2. Can't fuel part of a fleet within a depot; must fuel all the buses at the depot.
    3. Need to consider installing diesel oxidation catalysts on older buses.
- Expected program costs: DOC ~ $1500@, ~DPF $5000@ and ULSD ?12¢/gal.
- Expected emissions reductions:
    1. ULSD - 10-20% reduction NOx and particulates.
    2. DOC - 30% particulate reduction without ULSD, 40% particulate reduction with ULSD, 50% reduction HC and CO.

3. DPF - 95% reduction particulates, 90% reduction HC and CO, 95% reduction PAH/toxics. Requires the use of ULSD. Note: Smallest particulates reduced at the same percentage as large particulates.

- Where is program today?
    1. Fueling 2500 school buses with ULSD.
    2. 250 buses have DOC's installed on them.
    3. RFP on the street for purchasing a combination of 1000 DOC's and DPF's.

Important consideration:
By June of 2006 most diesel fuel available for purchase will be ULSD. Beginning 2007 all new heavy duty diesel engines will have to meet stringent new emission requirements, probably utilizing the combination of DPF and ULSD – provide EPA table.

The best near term strategy may be to get rid of pre 1995 school buses, focus on installing DOC's on other buses, and try to accelerate the introduction of ULSD fuel.

III Policy and Technology Options:
Effective solutions to transportations problems and air quality issues generally have more to do with well thought out policies than innovative technologies.

Before describing some technology options I will briefly mention some planning and policy considerations.

- Zoning and Land Use Planning:
  Are people being encouraged to live in urban centers and its nearby suburbs, or is development being extended further into rural areas. Problems aren't just associated with the transportation needs for these people in the newly developed areas, but with the associated commercial development, delivery services, utilities and infrastructure requirements, all of which contribute to the downward spiral from an environmental, energy and ultimately economic standpoint.
- The Cost of Energy:
  At some point the cost of energy will influence people's decisions. The cars people purchase, where they live and transit use will be considered in the context of energy costs. You can't have enlightened and successful transportation policies with cheap gasoline. Further taxing of gasoline is necessary (if the current escalation of gasoline price doesn't beat you to it) or better yet a Carbon Tax to equitably influence all fossil fuel and energy use.
- Transportation Planning:
  Are policies implemented to encourage the use of mass transportation and car pooling? Is congestion pricing being considered and applied to the degree that will influence transportation decisions? Are there HOV lanes and are they designed to encourage shared rides? Look at the typical suburban High School parking lot – is that the future you want? Why not have students pay for parking and correlate the cost to the size and efficiency of the vehicle, e.g. Suburban

$5/day, small hybrid and compact cars 50¢/day. What about shopping mall parking?

Technology:

- Truck stop electrification – describe technology
    1. Installation at 25 truck bays at Hunts Point Meat Market in the Bronx – planning to include produce and fish markets.
    2. NJ is a major truck route to and from the Northeast, and it has major distribution centers, shipping terminals and container shipping – there are many truck stop electrification opportunities.
- Hybrid Electric Transit Buses – describe technology
    1. MTA/NYCT is placing in service 350 hybrid electric transit buses. They have 2x fuel efficiency, very low emissions, quieter operation and better performance. Better strategy than CNG fueled buses. Big opportunity for NJ Transit and other commuter buses in NJ.
    2. Hybrid electric drive vehicles can be used in numerous applications; cars, small trucks, large trucks etc. For cars you achieve 2x fuel efficiency and SULEV emission levels – very good strategy for NOx reductions. Delivery applications - Fed Ex, UPS and USPS. Possible applications for all-electric and plug-in electric drive vehicles. Don't be fooled by mild hybrids coming to market.
    3. All future village, municipal and state vehicles purchased should be hybrids electric vehicles.
- Bus Rapid Transit
    1. Probably the most cost effective transit option; may be particularly suited for NJ. If the bus system provided faster and more convenient transit people will use it. Should provide prioritized lanes, traffic light preemption, fast ingress and egress, comfortable, quiet and clean.
- Electric Station Cars – describe application
    1. Typical suburban family has "fleet" of cars, and most trips (and mileage) are short trips.
    2. Priority parking – clean, quiet, good neighbors.
    3. Include small hybrids. Large vehicles go to back of lot; take up space and have all the wrong characteristics – bad neighbors.
- Replacement Vehicles (not strictly a technology option)
    1. The greatest reduction in emissions can be achieved in removing old vehicle from the roadways including cars, trucks, school buses and transit buses. These vehicles had to comply with much less stringent emissions regulations, and have deteriorated significantly beyond those levels. Perhaps higher taxes on very old cars, especially those with high mileage, remove from service school and transit buses after ten years of service, and strict enforcement to get smoke belching trucks off the roads.
    2. Develop regulations, testing and maintenance, and enforcement to achieve these results.